

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO BUILDINGS

- (71) I, HENRY CANNON, a citizen of the Republic of Ireland, of 126 Dean Swift Road, Ballymun, Dublin Republic of Ireland, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention relates to buildings and has for its object to provide a building which is simple to erect from prefabricated components and is relatively inexpensive, and the components of which are such as to minimise the possibility of moisture entering the building.
- According to the present invention there is provided a building comprising at least four corner posts disposed one at each corner of the building, each of which corner posts is in the form of an extrusion, of constant cross-section, shaped to provide two channels accommodating upright edges of respective upright wall panels, which panels extend at right angles to one another, wherein the bottom of each channel is formed with a respective tongue directed outwards of the building and engaging into the upright edge of the respective panel, to prevent penetration of moisture through the joints between the wall panels and the corner posts.
- The building may include intermediate posts disposed between said corner posts, each said intermediate post having a pair of channels disposed at an angle of 180° and accommodating respective upright edges of a coplanar pair of the said wall panels, the bottom of each said channel also being formed with a respective tongue directed outwards of the building and engaging into the upright edge of the respective panel to prevent penetration of moisture through the joints between the wall panels and the intermediate posts.
- If desired a partition may be provided in said building, said partition being located between partition channel members secured to an opposed pair of said intermediate posts and defining thereon third channels at right angles to the pairs of channels disposed at 180° on said posts.
- The building of the invention may have a roof comprising roof panels located between roof bearers supported by and of similar cross-section to respective ones of the posts, for example through the intermediary of a respective angled roof jointing member.
- The invention will be described further, by way of example, with reference to the accompanying drawings, which illustrate a preferred embodiment of the building of the invention and wherein:—
- Fig. 1 is a diagrammatic perspective view of the building;
- Fig. 2 is a diagrammatic sectional plan taken on the line II—II of Fig. 1.
- Fig. 3 is a fragmentary enlarged sectional view, taken through one of the intermediate posts of the building of Figs. 1 and 2;
- Fig. 4 is a fragmentary sectional plan through one of the intermediate posts of the building of Figs. 1 and 2;
- Fig. 5 is a fragmentary sectional plan through one of the corner posts of the building of Figs. 1 and 2;
- Fig. 6 is a sectional elevation corresponding to the upper part of the intermediate post of Fig. 3, but showing some additional details;
- Fig. 7 is a sectional elevation showing further details of the roof ridge of the building;
- Fig. 8 is a section taken on the line VIII—VIII of Fig. 7; and
- Figs. 9, 10 and 11 are sectional end views of three different components used in the building of Figs. 1 to 8.
- Referring to the drawings, and in particular to Figs. 1 and 2, a building constructed in accordance with the present invention has four corner posts 1 between two pairs of which are disposed two intermediate posts 2. Operatively connected between pairs of the corner posts 1 are corner roof bearers 3 which are of similar

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cross-section to the respective corner posts 1, while operatively connected between the intermediate posts 2 are intermediate roof bearers 4 which are similar in cross-section to the respective intermediate posts 2. Located between the posts 1 and 2 are wall panels 6, while disposed between the roof bearers 3 and 4 are roof panels 7 which meet at apex 5.

The corner posts 1 are each in the form of an elongate hollow angle-shaped extrusion of constant cross-section (see Fig. 5) presenting a pair of longitudinal channels 11 defined by limbs 12 and 12a and disposed at right angles to one another to receive a pair of the wall panels 6 disposed at right angles to one another and standing perpendicularly on a foundation 8. The limbs 12a of the channels 11 merge with respective webs 12b which define between them a longitudinal slot 13 for receiving the shank of a bolt 14, the head 15 of which is located in a recess 16 within the post 1 in register with the slot 13, a bridge member 17 defining the recess 16 and preventing the head 15 from moving towards curved outer wall 18 of the corner post 1.

The faces of the wall panels 6 in the interior of the building are provided with linings 21 co-planar with the limbs 12a. Claddings 22 are disposed over the linings 21 and are held in position by corner plates 23 held on the shanks of the bolts 14 by nuts 24. The corner plates 23 have projections 25 which fit into complementary recesses 26 in the claddings 22.

The form of the intermediate posts 2 is shown in detail in Figs. 3, 4 and 6 of the drawings, while the form of the intermediate roof bearers 4 is shown in detail in Figs. 3, 6, 7 and 8. The description hereinafter appearing with reference to the intermediate posts 2 is equally applicable to the intermediate roof bearers 4, where the context admits.

Each intermediate post and roof bearer 2 and 4 is an elongate hollow box-sectioned extrusion having two opposite sides extended to provide limbs 30 defining a pair of opposed channels 31 which make an angle of 180° with one another on opposed sides of the box section and which support wall panels 6 and roof panels 7, respectively.

Each of the intermediate posts 2 and roof bearers 4 is provided, on one side thereof between adjacent limbs 30 of its opposed channels 31, with a longitudinal slotted recess or channel 32, 32a or 32b directed inwardly into the hollow interior of said post or bearer. Fig. 4 shows one of the intermediate posts 2 and located in the slotted recess or channel 32 therein are the heads 33 of bolts 34, the shanks of which project from the slotted recess or channel 32 and through apertures in an elongate partition channel member 35 which provides a third channel disposed at right angles to the opposed channels 31 of the intermediate post 2, the partition channel member 35 being secured on the bolts 34 by nuts 36 and sup-

porting a partition wall or panel 6a. The partition wall or panel 6a is supported at its other end by a second elongate partition channel member identical to the channel member 35.

The intermediate roof bearers 4 are operatively connected to the respective intermediate posts 2 by respective angled posts jointing members 41 (Figs. 3 and 6), limbs 41a of which are a close fit in the hollow interiors of the intermediate posts 2, while their other limbs 41b project at an acute angle to the horizontal to support the ends of the respective intermediate roof bearers 4, the hollow interiors of which receive such limbs 41b. Each intermediate roof bearer 4 has a pair of channels 31, as mentioned above, for supporting co-planar roof panels 7 disposed on opposite sides of such intermediate roof bearer 4. Corresponding intermediate posts 2 and roof bearers 4 are joined together by respective angle brackets 42, of which one limb 42a is secured to the upper end of the respective intermediate post 2, while the other limb 42b is secured to the lower end of the intermediate roof bearer 4 so as to extend across the junction therebetween. Extending through the limbs 42a and 42b of the angle bracket 42 are the shanks of bolts 43a and 43b, the head 44a of each bolt 43a being located in the slotted recess or channel 32 already described with reference to Fig. 4, and the head 44b of each bolt 43b being located in a similar slotted recess or channel 32a provided in the adjacent intermediate roof bearer 4. Screwed onto the projecting shanks of the bolts 43a and 43b are nuts 45a and 45b which secure the angle brackets 42 to the respective intermediate posts 2 and roof bearers 4.

As shown in Figs. 7 and 8 the intermediate roof bearers 4 are operatively connected together at the apex 5 by angled roof jointing members 46 of cross section, similar to the post jointing members 41 employed to support the intermediate roof bearers 4 upon the intermediate posts 2, the obtuse angle between the limbs 46a and 46b of the roof jointing members 46 being greater than the obtuse angle between the limbs 41a and 41b of the post jointing members 41. The structure at the apex 5 may be stabilized by angle-sectioned supports 47, of which one limb 47a is secured to one of the intermediate roof bearers 4 by a nut 48 screwed onto a bolt 49 the head 49a of which is located in a slotted recess or channel 32a provided on the intermediate roof bearer 4, while the other limb 47b is secured to the corresponding other intermediate roof bearer 4 by a nut 51 screwed onto a bolt 52 the head 52a of which is located in a slotted recess or channel 32b provided on such intermediate roof bearer 4. The exterior of the apex 5, following insertion of the roof panels 7, is covered by a flash band 53 or like covering to prevent ingress of moisture through the apex 5 to the interior of the building.

The wall and roof panels 6 and 7 respectively each consist of a layer 55 of expanded polystyrene sandwiched between layers 56 of asbestos cement or galvanised sheet steel which are faced, on the exterior thereof, with coatings 57 of plastics material (Fig. 4).

Each of the corner posts 1 and intermediate posts 2, and corner and intermediate roof bearers 3 and 4 is formed with tongues 58 which project from the bottoms of the channels provided therein, these tongues 58 engaging into the respective edges of the wall and roof panels 6 and 7 to bite into the expanded polystyrene layers 55 thereof, and being directed outwards towards the exterior of the building so that any moisture which might enter the walls or roof of the building cannot penetrate to the interior of the building along the joints between the wall and roof panels 6 and 7 and their posts 1, 2 and bearers 3 and 4.

One method of erecting the building comprises providing a concrete foundation 8 in which are embedded angled bolts 62, threaded stems 63 of which project upwards from the foundation 8 and through apertures in substantially Z shaped or angled sole pieces 64 which are secured to the foundation 8 by nuts 65 screwed onto the threaded stems 63 of the bolts 62. Fig. 3 shows the manner in which one of the intermediate posts 2 is secured to its sole piece 64, and it will be understood that the corner posts 1 may be secured to the foundation 8 by similar means. An aperture is provided in upstanding limb 64a of each sole piece 64 and extending through said aperture is the shank of a bolt 66 whose head 67 is located in the slotted recess or channel 32 provided in the intermediate post 2. Screwed onto the shank of the bolt 66 is a nut 68 which secures the intermediate post 2 to the sole piece 64, and consequently, to the foundation 8. The wall panels 6 are then located in position between the corner posts 1 and intermediate posts 2.

The post jointing members 41 are then located in the upper ends of the intermediate posts 2 and the intermediate roof bearers 4 are then located on the post jointing members 41 in the manner described above. Jointing members similar to the post-jointing members 41 are employed to support the corner roof bearers 3 upon the corner posts 1.

If desired, that portion of each intermediate roof bearer 4 in which the slotted recess or channel 32a or 32b is disposed may be cut away, at one end, so that when said end is engaged over the limb 41b of the respective post jointing member 41, (see Fig. 3) the cut-away end overhangs the adjacent end of the corresponding intermediate post 2 in the manner of the eaves of a conventional building. As shown in Fig. 3 a gutter 71 may be arranged beneath the projecting ends of the intermediate roof bearers 2, and their associated

roof panels 7, to collect rain falling from the roof structure.

The components shown in Figs. 9, 10 and 11 of the drawings may be employed to provide added refinements to the building described with reference to the preceding figures. For example, Fig. 9 shows an extruded aluminium eave section 72 which may provide an enhanced appearance when placed in a position in which the limbs of the eave section 72 are in the same planes as the limbs 42a and 42b of the angle bracket 42, in the place of such bracket 42. An extruded aluminium ridge member 73 as shown in Fig. 10 may be located in position below the apex 5 in the place of angle-sectioned support 47. Finally, an extruded aluminium sill 74 shown in Figure 11 may be provided as a foundation for a window or other fitment disposed in a corresponding opening in a wall of the building.

The various posts, bearers, jointing members and sole pieces referred to above may be in the form of extruded aluminium sections. The hollow interiors of the corner and intermediate posts and roof bearers 1, 2, 3 and 4 may be padded with elongate padding members (not shown) of insulating material.

WHAT I CLAIM IS:—

1. A building comprising at least four corner posts disposed one at each corner of the building, each of which corner posts is in the form of an extrusion, of constant cross-section, shaped to provide two channels accommodating upright edges of respective upright wall panels, which panels extend at right angles to one another, wherein the bottom of each channel is formed with a respective tongue directed outwards of the building and engaging into the upright edge of the respective panel, to prevent penetration of moisture through the joints between the wall panels and the corner posts.

2. A building as claimed in claim 1 further including intermediate posts disposed between said corner posts, each said intermediate post having a pair of channels disposed at an angle of 180° and accommodating respective upright edges of a coplanar pair of the said wall panels, the bottom of each said channel also being formed with a respective tongue directed outwards of the building and engaging into the upright edge of the respective panel to prevent penetration of moisture through the joints between the wall panels and the intermediate posts.

3. A building as claimed in claim 2 wherein at least one opposed pair of said intermediate posts are each provided with a respective partition channel member defining a third channel at right angles to the said pair of channels disposed at an angle of 180°, said third channels accommodating opposite upright ends of a partition wall or panel.

4. A building as claimed in claim 2 or 3

- wherein the intermediate posts are box-sectioned members two opposite sides of which are extended to provide the pair of channels on opposed sides of the box section.
- 5 5. A building as claimed in any preceding claim and having a roof comprising roof panels located between roof bearers supported by respective ones of the posts and of similar cross-section to their respective posts.
- 10 6. A building as claimed in claim 5 wherein each roof bearer is supported by its respective post through the intermediary of a respective angled post jointing member.
- 15 7. A building as claimed in claims 2 and 6 wherein each of the intermediate posts and its respective roof bearer are hollow, and receive the respective limbs of the respective jointing member.
- 20 8. A building as claimed in claim 7 wherein an angle bracket is secured across the junction between each intermediate post and its respective roof bearer.
- 25 9. A building as claimed in any of claims 5 to 8 wherein the roof is a ridged roof whose panels meet at an apex whereat they are connected by an angle-sectioned support secured to the undersides of at least one abutting pair of the roof bearers.
- 30 10. A building as claimed in claim 9 wherein the apex of the roof is covered by a flash band or like covering to prevent ingress of moisture at the apex.
- 35 11. A building as claimed in any preceding claim wherein each corner post is longitudinally slotted to accommodate bolts whose shanks project inwardly of the building between the two channels and which carry corner plates which serve to clamp cladding against the inner surfaces of the wall panels.
12. A building as claimed in claims 3, 5 and 8 in which each intermediate post and its respective roof bearer are provided, along one side thereof, with a longitudinal slot registering with a recess within said post or bearer which recesses accommodate the heads of bolts whose shanks project through the slots and which serve to secure the corresponding angle bracket in position.
13. A building as claimed in any preceding claims wherein each corner post and each intermediate post (if provided) is secured, at its bottom end, to a respective angled sole piece or L-shaped bracket bolted to a foundation of concrete.
14. A building as claimed in claim 13 wherein each sole piece or L-shaped bracket is bolted to the foundation by means of a respective angled bolt embedded in the foundation and having a threaded stem projecting therefrom.
15. A building as claimed in any preceding claim wherein the wall panels comprise expanded polystyrene sandwiched between layers of asbestos cement or galvanised sheet steel.
16. A building as claimed in claim 15 wherein the asbestos cement or galvanised sheet steel layers are faced with plastics material.
17. A building substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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COMPLETE SPECIFICATION

4 SHEETS

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Sheet 1

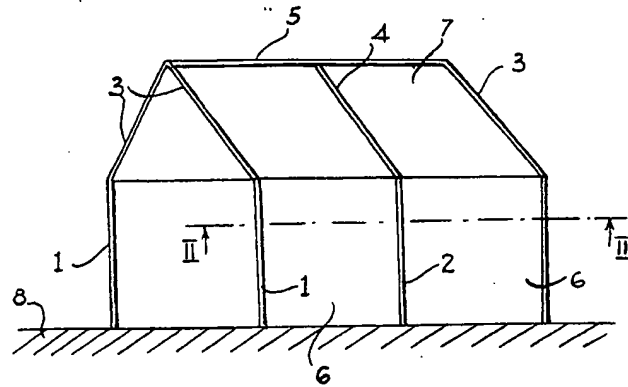


FIG. 1

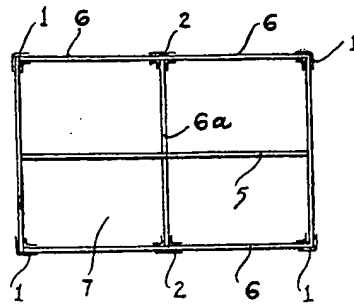


FIG. 2

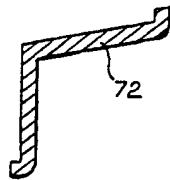


FIG. 9



FIG. 10

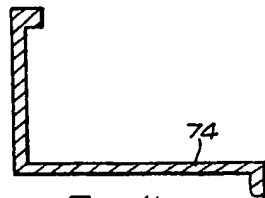


FIG. 11

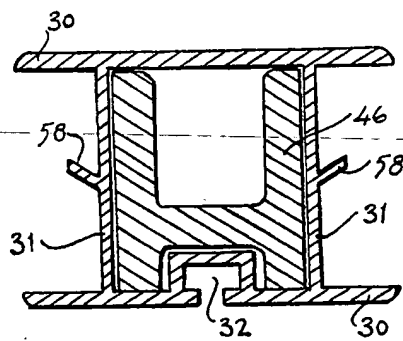


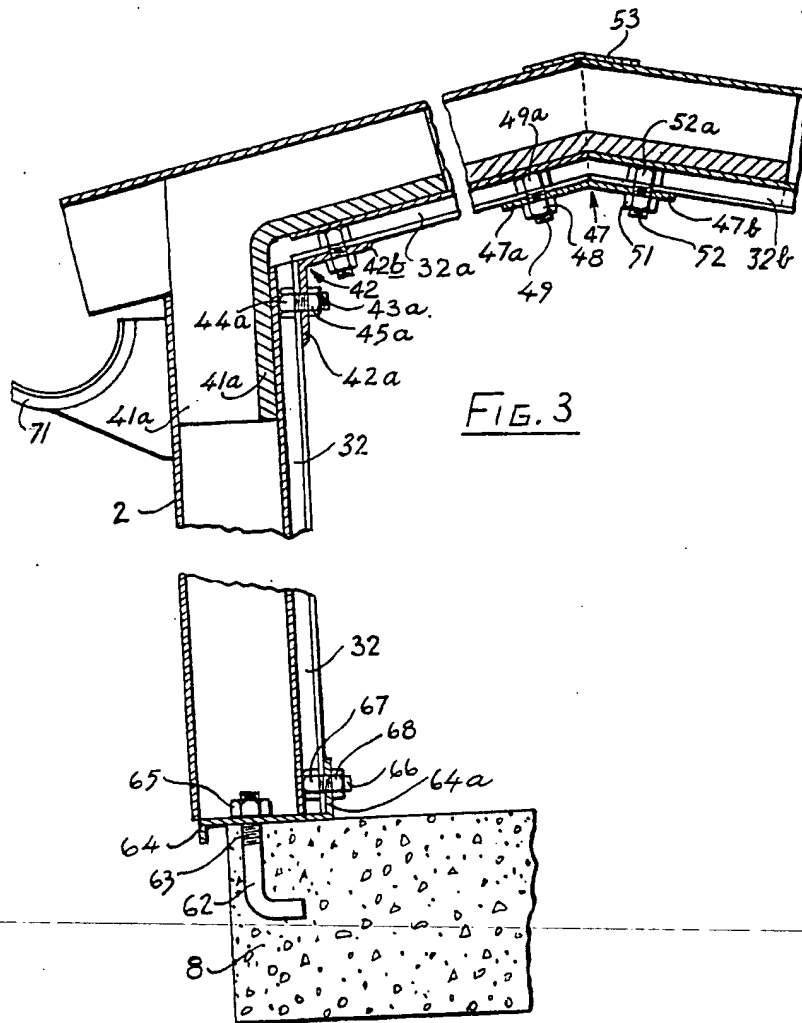
FIG. 8

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Sheet 3

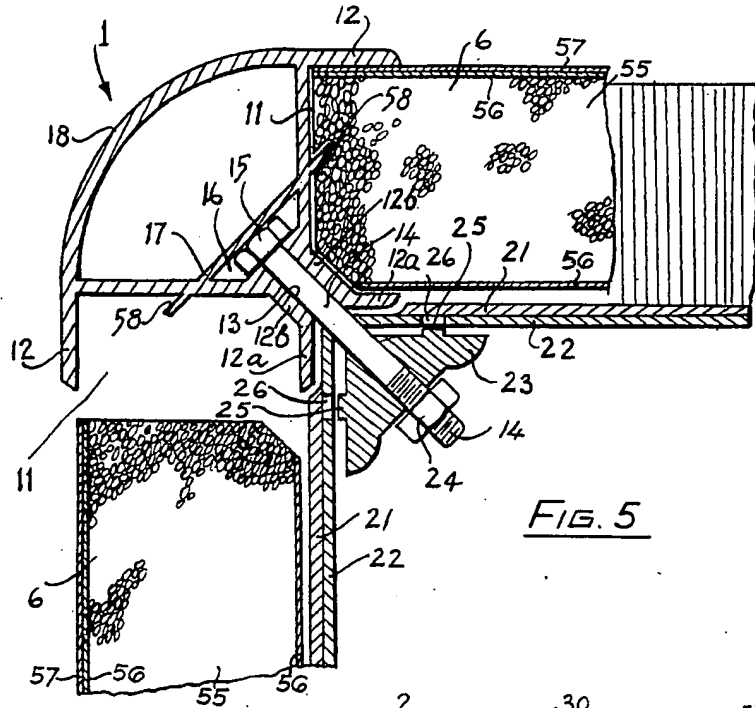


FIG. 5

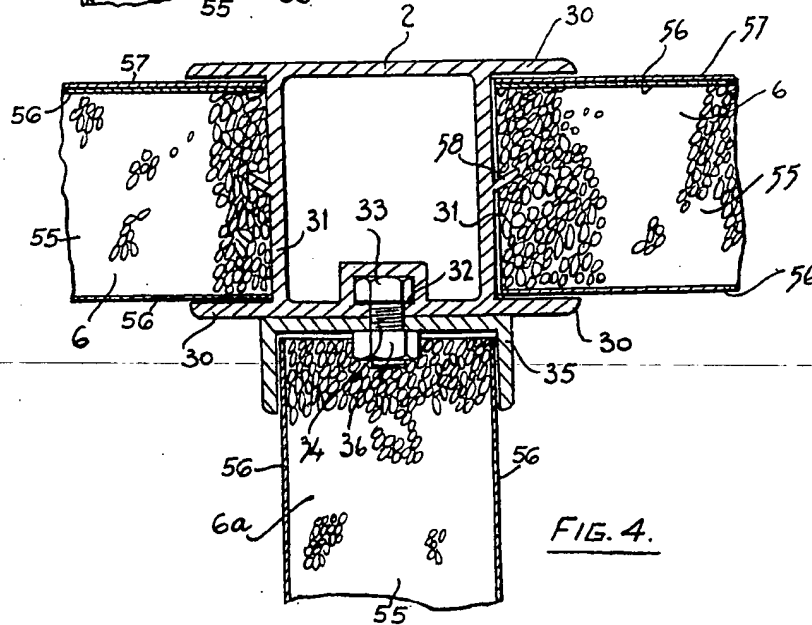


FIG. 4.

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Sheet 4

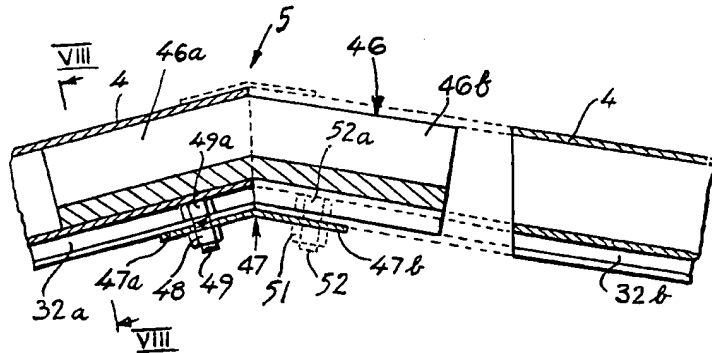


FIG. 7

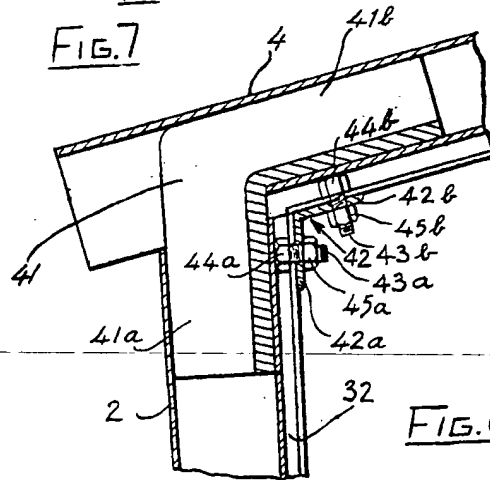


FIG. 6